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**PHYSICS**

**0625/51**

Paper 5 Practical

**October/November 2017**

MARK SCHEME

Maximum Mark: 40

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**Published**

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This document consists of **5** printed pages.

Question	Answer	Marks
1(a)	$a = 19 - 21$	1
1(b)(i)	Q values 1.(0), 2.(0), 3.(0), 4.(0), 5.(0)	1
1(b)(ii)	b values all less than 50 cm and decreasing	1
1(b)(iii)	Correct 1 / Q values 1.(0), 0.5(0), 0.33(3), 0.25, 0.2(0)	1
1(c)	Graph:	
	Axes correctly labelled	1
	Suitable scales	1
	All plots correct to $\frac{1}{2}$ small square	1
	Good line judgement, thin, continuous line	1
1(d)	Triangle method clearly shown on graph	1
	At least half line used for triangle method and G recorded	1
1(e)	P correct calculation of $G/a$ and in range 1.8 – 2.0	1

Question	Answer	Marks
2(a)(i)	$V$ to at least 1 dp and $< 3\text{ V}$	1
	$I$ to at least 2dp and $< 1\text{ A}$	1
2(a)(ii)	$R_1$ correct	1
2(b)(i),(ii)	New values of $V$ and $I$ and $R_2$ correct AND $2 \times R_1 \pm 10\%$	1
2(c)(i)	New values of $V$ and $I$ with $I_3 < I_2$	1
2(c)(ii)	$R_3$ present and $V, I, R$ units seen at least once and not contradicted	1
2(d)	Statement to match readings AND Justification to include the idea of within (or beyond, ecf) the limits of experimental accuracy	1
2(e)	Determine each resistance in turn	1
2(f)	Three resistors in parallel, voltmeter in parallel with resistors and correct symbols for voltmeter and resistors	1
	Variable resistor in series, correct symbol in a workable circuit	1
2(g)	Repeat with different currents	1

Question	Answer	Marks
3(a)	Table:	
	$v =$ in range 45 – 80	1
	$uv$ correct	1
	$D = u + v \pm 1$ cm	1
3(b)	$v =$ in range 25 – 35	1
	$D = u + v \pm 1$ cm	1
3(c)	One from: Different size / Different brightness Sharpness / clearness / coloured edges	1
3(d)(i),(ii)	$f$ values both rounding to 14 – 16 (cm)	1
3(d)(iii)	$f_A$ correct	1
	2 or 3 significant figures	1
3(e)	Any <b>two</b> from: Difficulty deciding exact position of sharpest image Difficulty measuring to centre of lens Product $uv$ increases problem Image edges blurred / not clear Insufficient sets of results	2

Question	Answer	Marks
4	<b>MP1</b> Stopwatch (or equivalent) AND (metre) rule / ruler	1
	<b>MP2</b> Measure time for 5 (+) oscillations	1
	<b>MP3</b> Divide by number of oscillations to find period ( $T$ )	1
	<b>MP4</b> Repeat for each bob	1
	<b>MP5</b> Variable; <b>one</b> from: Initial amplitude / starting position Length of pendulum / thread Number of oscillations	1
	<b>MP6</b> Table with column headings for $t$ , or period ( $T$ ), or both AND $d$ , with correct units	1
	<b>MP7</b> Conclusion: Plot graph(s) of $d$ against period ( $T$ ) or $t$ (or vice versa) OR compare period ( $T$ ) or $t$ values for different diameters	1